



Fig. 1

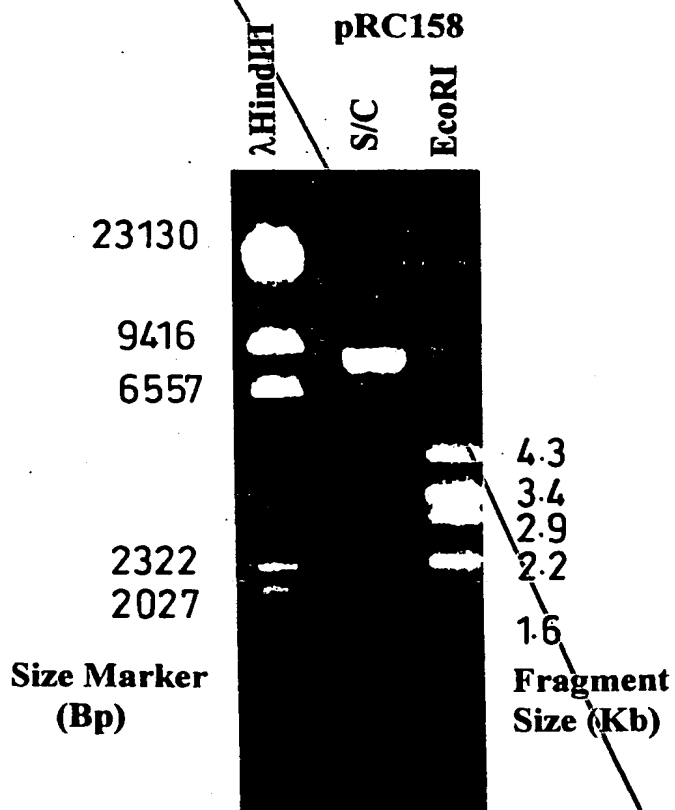
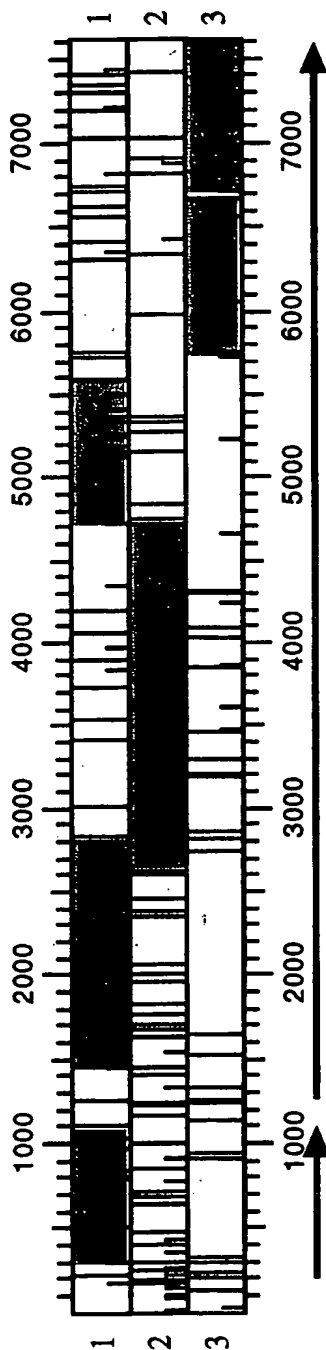


Fig. 2

Fig 3



| Gene | Initiator Codon | Terminator Codon | Molecular Weight |
|---------------------------------------|-----------------|------------------|------------------|
| Regulator | 295 | 1035 | 27102 |
| Transport | 1450 | 2805 | 47433 |
| Monooxygenase | 2810 | 4720 | 69650 |
| Hydroxymuconic semialdehyde hydrolase | 4717 | 5586 | 32770 |
| Catechol 2,3-dioxygenase | 5721 | 6665 | 33894 |
| Alcohol dehydrogenase | 6711 | 7580 | 30586 |

Fig 4

10 30 50
GAATTCATGTTCTTCTCCTTGCATGTGGCCCGCGTTGCCGAGGGCACTGCTCGGCCTGT
CTTAAGGTACAAGAAGAGGAACGTACACCGGGCGCAACGGCTCCCGTGACGAGCCGGACA

70 90 110
CGCCCGCAGAGGGCGCATGTCCGGGTGCCTGGATATGGCGCGTACGGCGTGCCCTCCGGC
GCGGGCGTCTCCCGGTACAGGCCCACGGACCTATACCGCGCATGCCGCACGGGAGGCGG

130 150 170
GTTAACCCCGAGGTTGGCCACGATGCCCCGGCCATCAGGTCTGGAATGCTAGCGTTCCAG
CAATTGGGGCTCCAACCGGTGCTACGGGGCCGGTAGTCCAGACCTTACGATCGCAAGGTC

190 210 230
ACGAAGGTAACCCACAGTGACTCACACCACAAGTACTAGAATGCAAGCTGTTGCGGTGAG
TGCTTCCATTGGGTGTCACTGAGTGTGGTGTTCATGATCTTACGTTGACAACGCCACTC

250 270 290
CGCCCGCGCATAAAGGGGGAGCCATGTCCGGGACGCCGACGAAAGCCTGACTCGATGACC
GCGGGCGCGTATTCCCCCTCGGTACAGGCCCTGCGGCTGCCTTTCGGACTGAGCTACTGG
M T

310 330 350
ACCACCGACACCGGCCCAAGCCGGGCGAGTGAGGCCCGCCCTGCTCGCCAATGTCCGC
TGGTGGCTGTGGCCGGGTTCGGCCCCGTCCTCCGGCGGGGACGAGCGGTTACAGGCG
T T D T G P K P G S E A A A L L A N V R

370 390 410
ACCTCGGGGGCGCGGCTGTCTCCGCGTTGTACGACATTCTGAAGAACCGGCTGCTCGAA
TGGAGCCCCCGCGCCGACAGGAGCGCAACATGCTGTAAGACTTCTTGGCCGACGAGCTT
T S G A R L S S A L Y D I L K N R L L E

430 450 470
GGGCGCTATGCGGCAGGCGAGAAGATCGTCGTCGAGTCGATCCGGCAAGAGTTCCGGGGTG
CCCCGATACGCCGTCCGCTCTTCTAGCAGCAGCTCAGCTAGGCCGTTCTCAAGCCCCAC
G R Y A A G E K I V V E S I R Q E F G V

490 510 530
AGCAAGCAGCCCGTCATGGACGCTCTGCGCCGCCTGTCCAGCGACAAGCTGGTCCACATC
TCGTTCTGTCGGGCGAGTACCTGCGAGACGCGGCGGACAGGTCGCTGTTTCGACCAGGTGTAG
S K Q P V M D A L R R L S S D K L V H I

550 570 590
GTTCCCCAGGTCGGTTGCGAGGTCGTCCTTACGCCCCGCGGAAGTGGAAGACTTCTAC
CAAGGGGTCCAGCCAACGCTCCAGCAGAGGATGCGGGGCGCGCTTACCTTCTGAAGATG
V P Q V G C E V V S Y A P R E V E D F Y

610 630 650
ACCTGTTCGGCGGTTTCGAAGGGACCATCGCCGCGGTAGCGGCCTCCCGGCGGACCGAG

TGGGACAAGCCGCCAAAGCTTCCCTGGTAGCGGCGCCATCGCCGAGGGCCGCTGGCTC
T L F G G F E G T I A A V A A S R R T E

670

690

710

GCCCAGTTGCTGGAGCTGGACCTGATCTCGGCGGGGTCGACGCCCTGATCACCTCCCAC
CGGGTCAACGACCTCGACCTGGACTAGAGCCGCGCCAGCTGCGGGACTAGTGGAGGGTG
A Q L L E L D L I S A R V D A L I T S H

730

750

770

GACCCGGTGGTCCGCGCCCCGCGGGTACCGCGTGCACAACCGGGAGTTCCATGCGGCCATC
CTGGGCCACCAAGGCGCGGGCGCCCATGGCGCACGTGTTGGCCCTCAAGGTACGCCGGTAG
D P V V R A R G Y R V H N R E F H A A I

790

810

830

CACGCGATGGCGCACTCGCGGATCATGGAGGAGACCAGCCAGCGAATGTGGGATCTGTCTG
GTGCGCTACCGCGTGAGCGCCTAGTACCTCCTCTGGTCGGTCGCTTACACCCTAGACAGC
H A M A H S R I M E E T S Q R M W D L S

850

870

890

GACTTCTTGATCAACACCACCGGCATCACCAACCCGCTCTCGAGCGCACTGCCCCGACCGG
CTGAAGAACTAGTTGTGGTGGCCGTAGTGGTTGGGCGAGAGCTCGCGTGACGGGCTGGCC
D F L I N T T G I T N P L S S A L P D R

910

930

950

CAGCATGACCACCACGAAATCACCGAGGCCATCCGCAACCGTGACGCAGCTGCCGCCCCG
GTCGTACTGGTGGTGTCTTTAGTGGCTCCGGTAGGCGTTGGCACTGCGTCGACGGCGGCG
Q H D H H E I T E A I R N R D A A A A R

970

990

1010

GAGGCCATGGAACGCCACATCGTCGGCACCATCGCAGTAATCCGCGACGAATCCAACGCC
CTCCGGTACCTTGGCGGTGTAGCAGCCGTGGTGCATCATTAGGCGCTGCTTAGGTTGCGG
E A M E R H I V G T I A V I R D E S N A

1030

1050

1070

CAGCTGCCGAGCTAGACCCCGATACCCGGGCCATCGACCGGCTCCGCTATCGCGCCACCT
GTCGACGGCTCGATCTGGGGCTATGGGCGCGGTAGCTGGCCGAGGCATAGCGCGGTGGA
Q L P S *

1090

1110

1130

ACGCCGAGGGGGGACTCTCGGCCGTAGCGCTGCAGACGATCCACCGGCACCCTCCACGCT
TGCGGCTCCCCCTGAGAGCCGGCATCGCGACGTCTGCTAGGTGGCCGTGGGAGGTGCGA

1150

1170

1190

GACCCCTGTCTCGCCCTAGAGGGCCGGCGCGCCGTGATCACCTTTACCCTCATCCAGAG
CTGGGGACAGAGCGGGATCTCCCGGCCGCGCGGCAGCTAGTGAAATGGGAGTAGGTCTC

1210

1230

1250

ACTTGCCTCACCCCTCTATGCCCCGAGTAGCGTCTGAACTAGACGTCTAGCATTCTAGTTGA
TGAACGCAGTGGGAGATACGGGCTCATCGCAGACTTGATCTGCAGATCGTAAGATCAACT

1270

1290

1310

GTGCTCCCTCTCGAAGATTCTCCAGAGAACCCTCTCGAACATCCCCAGAAGAAAGGAGC

CACGAGGGAGAGCTTCTAAGAGGTCTCTTGGGGAGAGCTTGTAGGGGTCTTCTTTCTCTCG

1330

1350

1370

GGCCATGACGACCGCTTCGCACGCATCGTCTTCGGGGCAGAGCCCACTTCCGCCACACA
CCGGTACTGCTGGCGAAGCGTGCGTAGCAGGAAGCCCCGTGCTCGGGTGAAGGCGGGTGT

1390

1410

1430

GATCGGGGAAGCCCGACCGTGAGCACCACACCTACCTCCCCGACGAAGACCTCACCGCTG
CTAGCCCCCTTCGGGTGGCACTCGTGGTGTGGATGGAGGGGCTGCTTCTGGAGTGGCGAC

1450

1470

1490

CGGGTAGCGATGGCCAGCTTCATCGGTACCACCGTCGAGTACTACGACTTCTTCATCTAC
GCCCATCGCTACCGGTGCAAGTAGCCATGGTGGCAGCTCATGATGCTGAAGAAGTAGATG
M A S F I G T T V E Y Y D F F I Y

1510

1530

1550

GGCACCGCGCGCGCTGGTATTCCTGAGTTGTTCTTCCCGGATGTCTCGTCCGCGATC
CCGTGGCGCGCGCGCACCATAAGGGACTCAACAAGAAGGGCCTACAGAGCAGGCGCTAG
G T A A A L V F P E L F F P D V S S A I

1570

1590

1610

GGAATCCTGTTGTCGTTTCGCGACCTTCAGCGTTGGGTTCTTCGCCCCCGCTGGGTGGC
CCTTAGGACAACAGCAAGCGCTGGAAGTCGCAACCCAAGGAGCGGGCGGGCGACCCACCG
G I L L S F A T F S V G F L A R P L G G

1630

1650

1670

ATAGTGTTCGGGCACTTCGGTGACCGGGTCGGCCGCAAGCAGATGCTGGTGATCTCCCTG
TATACAAGCCCGTGAAGCCACTGGCCCGAGCCGGCGTTTCGTCTACGACCACTAGAGGGAC
I V F G H F G D R V G R K Q M L V I S L

1690

1710

1730

GTCGGAATGGGCTCGGCCACCGTACTGATGGGATTGTTGCCCGGTTACGCCCAAATCGGG
CAGCCTTACCCGAGCCGGTGGCATGACTACCCTAACAACGGGCCAATGCGGGTTTAGCCC
V G M G S A T V L M G L L P G Y A Q I G

1750

1770

1790

ATCGCCGCCCCCATCTGCTGACCCCTGCTGCGCCTGGTGACGGGCTTTGCCGTCGGCGGG
TAGCGGCGGGGGTAGGACGACTGGGACGACGCGGACCACGTCCCGAACGGCAGCCGCCG
I A A P I L L T L L R L V Q G F A V G G

1810

1830

1850

GAGTGGGGTGGAGCCACCCTGATGGCCGTCGAGCACGCCCCCACC CGGAAGAAGGGCTTT
CTACCCCCACCTCGGTGGGACTACCGGCAGCTCGTGCGGGGGTGGCGCTTCTTCCCGAAA
E W G G A T L M A V E H A P T A K K G F

1870

1890

1910

TTCGGATCCTTCTCCCAGATGGGGGCACCCGCCGGGACCAGCGTCGCAACCCCTGGCGTTC
AAGCCTAGGAAGAGGTCTACCCCCGTGGGCGGCCCTGGTGCAGCGTTGGGACCGCAAG
F G S F S Q M G A P A G T S V A T L A F

1930

1950

1970

TTCGCGGTCTCCCAATTGCCCGACGAGCAGTTCCTGAGTTGGGGCTGGCGACTGCCGTTT

AAGCGCCAGAGGGTTAACGGGCTGCTCGTCAAGGACTCAACCCCGACCGCTGACGGCAAG
F A V S Q L P D E Q F L S W G W R L P F

1990

2010

2030

CTGTTTCAGCGCGGTGCTGATCGTGATCGGGCTGTTTCATTTCGCCTGTCCCTGGCCGAAAGC
GACAAGTCGCGCCACGACTAGCCTAGCCCGACAAGTAAGCGGACAGGGACCGGCTTTCG
L F S A V L I V I G L F I R L S L A E S

2050

2070

2090

CCCGACTTCGCCGAGGTGAAGGCACAGAGCGCCGTGGTGCGAATGCCGATCGCCGAAGCG
GGGCTGAAGCGGCTCCACTTCCGTGTCTCGCGGCACACGCTTACGGCTAGCGGCTTCGC
P D F A E V K A Q S A V V R M P I A E A

2110

2130

2150

TTCCGCAAGCACTGGAAGGAAATTCTCCTCATCGCGGGCACCTACCTGTCCCAAGGAGTG
AAGGCGTTCGTGACCTTCCTTTAAGAGGAGTAGCGCCCGTGGATGGACAGGGTTCCTCAC
F R K H W K E I L L I A G T Y L S Q G V

2170

2190

2210

TTGCCTATATCTGCATGGCCTACCTCGTCTCCTACGGCACACCGTCGCGGGGATCAGC
AAGCGGATATAGACGTACCGGATGGAGCAGAGGATGCCGTGGTGGCAGCGCCCTAGTCG
F A Y I C M A Y L V S Y G T T V A G I S

2230

2250

2270

CGCACCTTCGCCCTGGCCGGAGTATTTCGTGCGCCGGCATCGTCGCCGTCTCCTCTACCTC
CGGTGGAAGCGGGACCGGCCTCATAAGCAGCGGCCGTAGCAGCGGCAGGAGGATGGAG
R T F A L A G V F V A G I V A V L L Y L

2290

2310

2330

GTGTTTCGGCGCTCTGTCCGACACTTTCGGCCGCAAGACCATGTACCTGCTCGGCGCCGCC
CACAAGCCGCGAGACAGGCTGTGAAAGCCGGCGTTCTGGTACATGGACGAGCCGCGCGG
V F G A L S D T F G R K T M Y L L G A A

2350

2370

2390

GCGATGGGTGTGGTGATCGCCCCCGCCTTCGCACTGATCAACACCGGCAACCCGTGGCTG
CGTACCCACACCACTAGCGGGGGCGGAAGCGTGACTAGTTGTGGCCGTTGGGCACCGAC
A M G V V I A P A F A L I N T G N P W L

2410

2430

2450

TTTCATGGCCGCGCAGGTGCTGGTCTTCGGAATTGCAATGGCCCCCGCCGCGGCGTGACA
AAGTACCGGCGGTCCACGACCAGAAGCCTTAACGTTACCGGGGGCGGCGCGCACTGT
F M A A Q V L V F G I A M A P A A G V T

2470

2490

2510

GGCTCCCTGTTTCACGATGGTCTTCGACGCGGACGTGCGCTACAGCGGTGTCTCTATCGGC
CCGAGGGACAAGTGCTACCAGAAGCTGCGCCTGCACGCGATGTCGCCACAGAGATAGCCG
G S L F T M V F D A D V R Y S G V S I G

2530

2550

2570

TACACCATCTCCCAGGTGCGCCGGCTCCGCGTTCGCCCCGACGATCGCGACCGCCTTGTA
ATGTGGTAGAGGGTCCAGCGGCCGAGGCGCAAGCGGGCTGCTAGCGCTGGCGGAACATG
Y T I S Q V A G S A F A P T I A T A L Y

2590

2610

2630

GCCTCCACCAACACCAGCAACTCGATCGTGACCTACCTGCTGATCGTCTCGGCCATCTCG
CGGAGGTGGTGTGGTCTGTGAGCTAGCACTGGATGGACGACTAGCAGAGCCGGTAGAGC
A S T N T S N S I V T Y L L I V S A I S

2650

2670

2690

ATCGTCTCGGTGATCCTGCTGCCCCGGCGGCTGGGGGCGCAAGGGCGCTGCGAGCCAGCTC
TAGCAGAGCCACTAGGACGACGGGCCGCCGACCCCCGCGTTCGCGGACGCTCGGTCTGAG
I V S V I L L P G G W G R K G A A S Q L

2710

2730

2750

ACTCGCGACCAGGCCACCTCCACACCGAAAAATGCCTGACACCGAAACATTTTCGACTCGG
TGAGCGCTGGTCCGGTGGAGGTGTGGCTTTTACGGAAGTGTGGCTTTGTAAAAGCTGAGCC
T R D Q A T S T P K M P D T E T F S T R

2770

2790

2810

ACAGTTCCGGACACCGCAGCATCCCTGCGCGTCTCGACAAGTGAAGTGATGACAGACAT
TGTCAGGCCTGTGGCGTCTGAGGACGCGCAGGAGCTGTTCACCTTCACTACTGTCTGTA
T V P D T A A S L R V L D K * M T D M

2830

2850

2870

GAGTGACCACGACCGCACCTCCTACGACACCGACGTCGTGATCGTTCGGCCTCGGCCCGC
CTCACTGGTGTGGCGTGGAGGATGCTGTGGCTGCAGCACTAGCAGCCGGAGCCGGGGCG
S D H D R T S Y D T D V V I V G L G P A

2890

2910

2930

CGGTGGCACAGCGGCGCTTGCCCTGGCCAGCTACGGCATCCGCGTTACGCCGTCTCGAT
GCCACCGTGTGCCCGCAACGGGACCGGTGATGCCGTAGGCGCAAGTGCGGCAGAGCTA
G G T A A L A L A S Y G I R V H A V S M

2950

2970

2990

GTTCCCTGGGTGGCGAACTCGCCGCGCGCGCACATCACCAACCAGCGCGCCGTCTGAAGT
CAAGGGGACCCACCGCTTGAGCGGCGCGCGCTGTAGTGGTTGGTTCGCGCGGCAGCTTCA
F P W V A N S P R A H I T N Q R A V E V

3010

3030

3050

GCTGCGTGACCTGGGCGTGAAGACGAGGCGCGCAACTACGCCACCCCGTGGGACCAGAT
CGACGCACTGGACCCGACGCTTCTGCTCCGCGCGTTGATGCGGTGGGGCACCCCTGGTCTA
L R D L G V E D E A R N Y A T P W D Q M

3070

3090

3110

GGGCGACACGCTGTTCACCACGAGCCTGGCCGGCGAGGAGATCGTCCGGATGCAGACCTG
CCCCTGTGCGACAAGTGGTGCTCGGACCGGCCGCTCCTCTAGCAGGCCTACGTCTGGAC
G D T L F T T S L A G E E I V R M Q T W

3130

3150

3170

GGGTACGGGCGATATCCGCTACGGGGACTACCTGTCCGGAAGCCCCCTGCACGATGCTCGA
CCCATGCCCCGCTATAGGCGATGCCCCCTGATGGACAGGCCTTCGGGGACGTGCTACGAGCT
G T G D I R Y G D Y L S G S P C T M L D

3190

3210

3230

CATTCGCGAGCCCCCTGATGGAGCCGGTGTGATCAAGAACGCCGCCGAACGTGGTGCGGT

GTAAAGCGTCGGGGACTACCTCGGCCACGACTAGTTCTTGC GGCGGCTTGCACCACGCCA
I P Q P L M E P V L I K N A A E R G A V

3250

3270

3290

CATCAGCTTCAACACCGAATACCTCGACCACGCCCAGGACGAGGACGGGGTGACCGTCCG
GTAGTCGAAGTTGTGGCTTATGGAGCTGGTGC GGGTCTGCTCCTGCCCCACTGGCAGGC
I S F N T E Y L D H A Q D E D G V T V R

3310

3330

3350

GTTCCGCGACGTCCGCTCGGGCACC GTGTTCACCCAGCGAGCCCGCTTCTGCTCGGTTT
CAAGGCGCTGCAGGCGAGCCCGTGGCACAAGTGGGTGCTCGGGCGAAGGACGAGCCAAA
F R D V R S G T V F T Q R A R F L L G F

3370

3390

3410

CGACGGCGCACGATCGAAGATCGCCGAACAGATCGGGCTTCCGTTCTGAAGGTGAACTCGG
GCTGCCGCGTGTAGCTTCTAGCGGCTTGTCTAGCCCGAAGGCAAGCTTCCACTTGAGCG
D G A R S K I A E Q I G L P F E G E L A

3430

3450

3470

CCGCGCCGGTACCGGTACATCCTGTTCAACGCGGACCTGAGCAAATATGTCGCTCATCG
GGCGCGGCCATGGCGCATGTAGGACAAGTTGCGCCTGGACTCGTTTATACAGCGAGTAGC
R A G T A Y I L F N A D L S K Y V A H R

3490

3510

3530

GCCGAGCATCTTGCACTGGATCGTCAACTCGAAGGCCGGTTTCGGTGAGATCGGCATGGG
CGGCTCGTAGAACGTGACCTAGCAGTTGAGCTTCCGGCCAAAGCCACTCTAGCCGTACCC
P S I L H W I V N S K A G F G E I G M G

3550

3570

3590

TCTGCTGCGCGGATCCGACCGTGGGACCAGTGGATCGCCGGCTGGGGCTTCGACATGGC
AGACGACGCGCGCTAGGCTGGCACCCCTGGTCACCTAGCGCCGACCCCGAAGCTGTACCG
L L R A I R P W D Q W I A G W G F D M A

3610

3630

3650

GAACGGCGAGCCGGATGTCTCCGACGACGTTGTCTCTGAACAGATCCGGACCCCTCGTCCG
CTTGCCGCTCGGCCTACAGAGGCTGCTGCAACAGGAGCTTGTCTAGGCCTGGGAGCAGCC
N G E P D V S D D V V L E Q I R T L V G

3670

3690

3710

CGACCCGCACCTGGACGTCGAGATCGTGTGAGGTCCTTCTGGTACGTCAACCGGCAGTG
GCTGGGCGTGGACCTGCAGCTCTAGCACAGTCCAGGAAGACCATGCAGTTGGCCGTCAC
D P H L D V E I V S R S F W Y V N R Q W

3730

3750

3770

GGCTGAGCACTACCAGTCCGGTCGAGTGTCTGCGGCGGCGACGCGGTGCACCGGCATCC
CCGACTCGTGATGGTCAGGCCAGCTCACAAGACGCCCGCTGCGCCACGTGGCCGTAGG
A E H Y Q S G R V F C G G D A V H R H P

3790

3810

3830

GCCGAGCAGCGGGCTGGGCTCGAACACGTCCATGCAGGACGCGTTCAACCTGGCATGGAA
CGGCTCGTCGCCCCACCCGAGCTTGTGACAGGTACGTCTGCGCAAGTTGGACCGTACCTT
P S S G L G S N T S M Q D A F N L A W K

3850

3870

3890

GATCGCGTTTCGTCTGAAGGGGTATGCAGGACCGGGTCTGCTCGAGTCTACTCTCTCTGA
CTAGCGCAAGCAGCACTTCCCCATACGTCCTGGCCAGACGAGCTCAGGATGAGAGGACT
I A F V V K G Y A G P G L L E S Y S P E

3910

3930

3950

GCGTGTTCCGGTCGGCAAACAGATCGTCTGCTCGCGCCAACAGTCCCAGGACTACGC
CGCACAAGGCCAGCCGTTTGTCTAGCAGCGAGCGCGGTTGGTCAGGGCGTTCCTGATGCG
R V P V G K Q I V A R A N Q S R K D Y A

3970

3990

4010

CGGGCTGCGCGAATGGTTCGATCAGGAGCGACGACCCGGTCCCGCCGGCCTGGCAA
GCCCCAGCGCTTACCAAGCTAGTGCTCTCGCTGCTGGGCCAGCGCGGCCGACCGTTT
G L R E W F D H E S D D P V A A G L A K

4030

4050

4070

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CAACTTCTTGGGAGCAGGCTTCCACAACGAGACGCACTCGCCGACATGCTCCGCGACCT
L K E P S S E G V A L R E R L Y E A L E

4090

4110

4130

GGTGAAGAACGCCGAATTC AACGCCAGGCGTCGAACTCAACCAGCGCTACACCTCGTC
CCACTTCTTGGCGGCTTAAGTTGCGGGTCCCGCAGCTTGAGTTGGTCGCGATGTGGAGCAG
V K N A E F N A Q G V E L N Q R Y T S S

4150

4170

4190

CGCGGTCGTTCCCGACCCCGAGGCGGGCGAGGAAGTGCGGTGCGCGATCGTGAGCTGTA
GCGCCAGCAAGGGCTGGGGCTCCGCCCCGCTCTTCACACCCACGCGCTAGCACTCGACAT
A V V P D P E A G E E V W V R D R E L Y

4210

4230

4250

CCTGCAGGCCACCAACCCGGCCGGGCGCGAAGCTGCCGCATGCGTGGCTGGTGGCGCCGA
GGACGTCCGGTGGTGGGCCGGCCCGCGCTTCGACGGCGTACGCACCGACCGCCGCGGCT
L Q A T T R P G A K L P H A W L V G A D

4270

4290

4310

CGGAACCCGCATCTCCACCCTCGACGTCACCGGCAAGGGAATGATGACCCTGCTGACCGG
GCCTTGGGCGTAGAGGTGGGAGCTGCAGTGGCCGTTCCCTTACTACTGGGACGACTGGCC
G T R I S T L D V T G K G M M T L L T G

4330

4350

4370

ACTCGGCGGCCAGGCATGGAAGCGTGCCGCCGCCAAACTCGACCTGCCGTTCTTGGCGGAC
TGAGCCGCCGGTCCGTACCTTCGCACGGCGGCGGTTTGAGCTGGACGGCAAGGACGCGTG
L G G Q A W K R A A A K L D L P F L R T

4390

4410

4430

CGTCGTTGTGCGCGAACC CGGCACCATCGACCTTACGGATACTGGCGGCGGGTCCGCGA
GCAGCAACAGCCGCTTGGGCCGTGGTAGCTGGGAATGCCTATGACCGCCGCCAGGCGCT
V V V G E P G T I D P Y G Y W R R V R D

4450

4470

4490

CATCGACGAGGCCCGCGCCCTGCTCGTGCGGCCCGACGGCTACGTCGCGTGGCGACACAG

GTAGCTGCTCCGGCCGCGGGACGAGCAGCCGGGCTGCCGATGCAGCGCACCGCTGTGTC
I D E A G A L L V R P D G Y V A W R H S

4510

4530

4550

TGCTCCGGTCTGGGACGACACCGAAGCGCTCACCAGCCTCGAGAACGCTCTCACC GCGGT
ACGAGGCCAGACCCCTGCTGTGGCTTCGCGAGTGGTCGGAGCTCTTGCAGAGTGGCGCCA
A P V W D D T E A L T S L E N A L T A V

4570

4590

4610

CCTCGACCACTCGGCCAGCGACAACGGGAACCCGAGCGGCACAAACGAGCCGAGTACAG
GGAGCTGGTGAGCCCGGTGCTGTGCCCTTGGGCTCGCCGTGTTTGGCTCGGCGTCATGTC
L D H S A S D N G N P S G T N E P Q Y S

4630

4650

4670

CACCCGGGCGGTGCCGATCGTTCGTCACGTTACCGCCGAGGATGCAGCACCAGCTTC
TGGGCCCCGCGACGGCTAGCAGCAAGCGGTGCAATGGCGGCTCCTACGTCGTGTCGAAG
T R A V P I V V P H V T A E D A A P A S

4690

4710

4730

CGCCACCCGCAACCACACAGTCGAGGGAGAGAACCGATGACCCGTCCTTACACCAGCGTC
CGGTGGGCGTGGTGGTGTCTAGCTCCCTCTCTTGGCTACTGGGCAGGAATGTGGTTCGAG
A T R T T T V E G E N R *

M T R P Y T S V

4750

4770

4790

TGGGACGACCTGAACCAGGTTCGAGTTCAGCCAGGGATTTCATCCAGGCCGGCCCCCTACCGG
ACCCTGCTGGACTTGGTCCAGCTCAAGTCGGTCCCTAAGTAGGTCCGGCCGGGGATGGCC
W D D L N Q V E F S Q G F I Q A G P Y R

4810

4830

4850

ACCCGATACCTGCACGCCGGCGATTTCGTCCAAGCCACGCTGATCCTGCTGCACGGCATC
TGGGCTATGGACGTGCGGCCGCTAAGCAGGTTTCGGGTGCGACTAGGACGACGTGCCGTAG
T R Y L H A G D S S K P T L I L L H G I

4870

4890

4910

ACCGGCCACGCCGAGGCGTACGTGCGCAATCTGCGCTCGCATTCCGAGCACTTCAACGTC
TGGCCGGTGGCGCTCCGCATGCACGCGTTAGACGCGAGCGTAAGGCTCGTGAAGTTGCAG
T G H A E A Y V R N L R S H S E H F N V

4930

4950

4970

TGGGCAATCGACTTCATCGGCCACGGCTATTTCGACCAAGCCCGACCCGCTCGAGATC
ACCCGTTAGCTGAAGTAGCCGGTGCCGATAAGCTGGTTTCGGGCTGGTGGGCGAGCTCTAG
W A I D F I G H G Y S T K P D H P L E I

4990

5010

5030

AAGCACTACATCGACCACGTGCTGCAGTTGCTGGACGCCATCGGCGTCGAGAAGGCCTCG
TTCGTGATGTAGCTGGTGCACGACGTCAACGACCTGCGGTAGCCGCGAGCTCTTCCGGAGC
K H Y I D H V L Q L L D A I G V E K A S

5050

5070

5090

TTTTCCGGGGAGTCTCTCGGCGGTTGGGTACCGCCAGTTTCGCGCACGACCATCCCGAG
AAAAGGCCCTCAGAGAGCCGCAACCCAGTGGCGGGTCAAGCGCGTGCTGGTAGGGCTC
F S G E S L G G W V T A Q F A H D H P E

5110 5130 5150
AAGGTCGACCGGATCGTGCTCAACACCATGGGCGGCACCATGGCCAACCCTCAGGTGATG
TTCCAGCTGGCCTAGCACGAGTTGTGGTACCCGCCGTGGTACCGGTTGGGAGTCCACTAC
K V D R I V L N T M G G T M A N P Q V M

5170 5190 5210
GAACGTCTCTATACCTGTGCGATGGAAGCGGCGAAGGACCCGAGCTGGGAACCGCTCAA
CTTGCAGAGATATGGGACAGCTACCTTCGCCGCTTCCTGGGCTCGACCCCTTGCGCAGTTT
E R L Y T L S M E A A K D P S W E R V K

5230 5250 5270
GCACGCCCTCGAATGGCTCATGGCCGACCCGACCATGGTCACCGACGACCTGATCCGCACC
CGTGCGGAGCTTACCGAGTACCGGCTGGGCTGGTACCAGTGGCTGCTGGACTAGGCGTGG
A R L E W L M A D P T M V T D D L I R T

5290 5310 5330
CGCCAGGCCATCTTCCAGCAGCCGGATTGGCTCAAGGCCCTGCGAGATGAACATGGCACTG
GCGGTCCGGTAGAAGGTCGTCGGCCTAACCGAGTTCCGGACGCTCTACTTGTACCGTGAC
R Q A I F Q Q P D W L K A C E M N M A L

5350 5370 5390
CAGGACCTCGAAACCCGCAAGCGGAACATGATCACCGACGCCACTCTCAACGGCATCACG
GTCCTGGAGCTTTGGGCGTTTCGCCTTGTACTAGTGGCTGCGGTGAGAGTTGCCGTAGTGC
Q D L E T R K R N M I T D A T L N G I T

5410 5430 5450
GTGCCCCGCGATGGTGCTGTGGACCACCAAGGACCCCTCCGGTCCGGTCGACGAAGCCAAG
CACGGGCGCTACCACGACACCTGGTGGTTCTCGGGGAGGCCAGGCCAGCTGCTTCGGTTC
V P A M V L W T T K D P S G P V D E A K

5470 5490 5510
CGCATCGCCTCCCACATCCCGGGCGCCAAGCTGGCCATCATGGAGAACTGTGGCCACTGG
GCGTAGCGGAGGGTGTAGGGCCCCGCGGTTCCGACCGGTAGTACCTCTTGACACCGGTGACC
R I A S H I P G A K L A I M E N C G H W

5530 5550 5570
CCCCAGTACGAGGACCCCGAGACCTTCAACAAGCTGCATCTGGACTTCCTCCTCGGTCCG
GGGTCATGCTCCTGGGGCTCTGGAAGTTGTTCGACGTAGACCTGAAGGAGGAGCCAGCG
P Q Y E D P E T F N K L H L D F L L G R

5590 5610 5630
AGCTGACACAGACCCCGGGCGGTGCGGCCAACCCCTGCAACCCGGGCGGCACCGGCCGGA
TCGACTGTGTCTGGGGCCGGCCACGGCGGTTGGGGACGTGGGGCCCGCGTGGCCGGCCT
S *

5650 5670 5690
TCTCACTTACCCGACCTATTGCGCTCTCGTCCGGACCCCGGAGAGAAAGCGCCGAAGCA
AGAGTGAATGGGCTGGATAACGCGAGAGCAGGCCTGGGGGCTCTCTTTTCGGGCTTCGT

5710 5730 5750
GCAGCAAGGAGACCGCCGCGATGCCTGTAGCGCTGTGCGCGATGTGCGACTCCCCCTGA

CGTCGTTCTCTGGCGGCGCTACGGACATCGCGACACGCGCTACAGCGTGAGGGGGGACT

M P V A L C A M S H S P L M

5770

5790

5810

TGGGACGCAACGACCCCGAACAGGAAGTCATCGACGCCGTCGACGCCGATTTCGACCACG
ACCTTGCGTTGCTGGGGCTTGTCCTTCAGTAGCTGCGGCAGCTGCGGGCGTAAGCTGGTGC
G R N D P E Q E V I D A V D A A F D H A

5830

5850

5870

CGCGCCGGTTCGTCGCCGACTTCGCCCCGATCTCATCGTCATCTTCGCCCCGACCACT
GCGCGGCCAAGCAGCGGCTGAAGCGGGGCTAGAGTAGCAGTAGAAGCGGGGGCTGGTGA
R R F V A D F A P D L I V I F A P D H Y

5890

5910

5930

ACAACGGCGTCTTCTACGACCTGCTGCCGCCGTTCTGTATCGGTGCCGCCGCGCAGTCCG
TGTTGCCGCAGAGATGCTGGACGACGGCGCAAGACATAGCCACGCGCGCTGAGGC
N G V F Y D L L P P F C I G A A A Q S V

5950

5970

5990

TCGGCGACTACGGCACCGAAGCCGGCCCTCTCGACGTCGACCGTGACGCCGCTACGCAG
AGCCGCTGATGCCGTGGCTTCGGCCGGGAGAGCTGCAGCTGGCACTGCGGGCGGATGCGTC
G D Y G T E A G P L D V D R D A A Y A V

6010

6030

6050

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A R D V L D S G I D V A F S E R M H V D

6070

6090

6110

ACCACGGATTTCGCCCCAAGCACTCCAATTGCTGGTTCGGATCGATCACCGCCGTGCCGACCG
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H G F A Q A L Q L L V G S I T A V P T V

6130

6150

6170

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P I F I N S V A E P L G P V S R V R L L

6190

6210

6230

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G E A V G R A A A K L D K R V L F V G S

6250

6270

6290

CCGGCGGCCTGTCCACGACCCCGCCGGTCCCGCAGTTCGCCACCGCGCCAGAGGAAGTGC
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G G L S H D P P V P Q F A T A P E E V R

6310

6330

6350

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CGCTCGCCAACTAGCTGCCGGCGTTAGGGTCACGGCGGCTTGCACTACGGGCGCTTGTCG
E R L I D G R N P S A A E R D A R E Q R

6370

6390

6410

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V I T A G R D F A A G T A A I Q P L N P

6430

6450

6470

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E W D R H L L D V L A S G D L E Q I D A

6490

6510

6530

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GCACCTGGTTGCTGACCAAGCAGCTTGTCGGGCTGTGAGGAGGGTGCTTCACCGCTGGA
W T N D W F V E Q A G H S S H E V R T W

6550

6570

6590

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I A A Y A A M S A A G K Y R V T S T F Y

6610

6630

6650

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TGGCGCTTTAGGTGCTCACCTATCGTCCTAAGCCCTAATGATGGCGGCAGCGGCAGCTGC
R E I H E W I A G F G I T T A V A V D E

6670

6690

6710

AATAGACCCCGCGCTCCCGCCCCGAGTCCCAACGAAGGGTGGCCCCGGATGACCTCCG
TTATCTGGGGCGGCGAGGGCGGGCGTCAGGGTTGCTTCCACCGGGGCCTACTGGAGGC
* M T S V

6730

6750

6770

TCCGCCCCGTGCTCGCCGTCGGTGAAACGCGGGCTGGTCGGTGGGCAGGAAGACCTCATCGC
AGGCGGGCACGAGCGGCAGCCACTTGCGCCCCGACCAGCCACCCGTCCTTCTGGAGTAGCG
R P C S P S V N A G W S V G R K T S S P

6790

6810

6830

CGACATCGCCCTCGACCTCGCAGCTCGTCAGTAGGAATGCGCACGGGCCGACGAGTCGCG
GCTGTAGCGGGAGCTGGAGCGTCGAGCAGTCATCCTTACGCGTGCCCGGCTGCTCAGCGC
T S P S T S Q L V S R N A H G P T S R A

6850

6870

6890

CTGGTCACCGGGGCCAGCCGCGGCATCGGGCGGCCATCGCAGATGCGGTGGCCGCCTCC
GACCAGTGGCCCCGTCGGCGCCGTAGCCCCGCGGTAGCGTCTACGCCACCGGCGGAGG
G H R G Q P R H R G G H R R C G G R L R

6910

6930

6950

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C R R N R P L R I R S D G R R C G V D G

6970

6990

7010

GCATCACGGCTGCCGGGGCCTCGCGGCTGCGGTCCAGGCCGACCTGTCCCGACCCGAGG

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7490

7550

7570

SUBSTITUTE SHEET (RULE 26)

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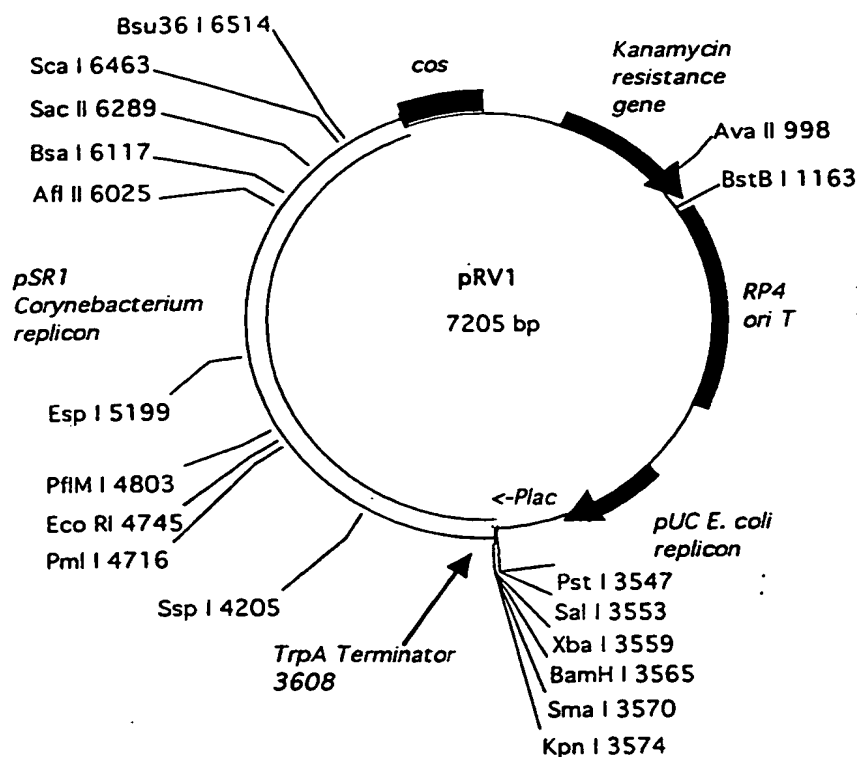


Fig 7

Fig 8

